its daily summer discharge does not amount to 298 millions of gallons, and its minimum sinks as low as 100 millions of gallons, while that of the Thames in the driest season never falls below 350 millions. In the one case, the water is stored up within the rocks and is dispensed gradually; in the other, it in great measure runs off at once.[115] It is likewise deserving of note that the operations of man, particularly in draining land and deforesting, may materially alter the mean level of a river and increase the volume of floods. The mean level of the Elbe at Dresden is said to have been perceptibly diminished by human interference, while in the Rhine the low-water level has been lowered, and the floods have been augmented.[116]

3. **Flow.**—While, in obedience to the law of gravitation, a river always flows from higher to lower levels, great variations in the rate and character of its motion are caused by inequalities in the angle of slope of its channel. A vertical or steeply inclined face of rock originates a waterfall; a rocky declivity in the channel gives rise to rapids; a flat plain allows the stream to linger with a scarcely visible current; while a lake renders the flow nearly or altogether imperceptible. Thus the rate of flow is regulated in the main by the angle of inclination and form of the channel, but partly also by the volume of water, an increase of volume in a narrow channel increasing the rate of motion even without an increase of slope.[117]

The course of a great river may be divided into three parts: 1. *The Mountain Track*—where, amid clouds or snows,

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[115] Prestwich, Q. J. Geol. Soc. xxviii. p. lxv. Compare the conditions of the catchment basin of the Seine as given by A. Delaire, Ann. Conserv. Arts et Metiers, No. 138, p. 335.

[116] Report of (Austrian) Committee on Diminution of Water in Springs and Rivers, Proc. Inst. Civ. Engineers, xlii., 1875, p. 271.

[117] See A. Tylor on the Laws of River-action, Geol. Mag. 1875, p. 443.